



# eX700M Series

## User Manual





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Other information available at: <https://oss.exorint.com/>

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# Introduction

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The operational guidelines described below is information which relates to the device, installation, transportation, storage, assembly, use and maintenance.

This Operating Instruction describes the main features of the Exor operator panels. The manual refers to the following models:

| Model   | Part Number | Description                                                        |
|---------|-------------|--------------------------------------------------------------------|
| eX705M  | EX705MU5P1  | HMI 5" TFT 800x480, PCAP Touch, 2x Ethernet, JMobile runtime       |
| eX707M  | EX707MU5P1  | HMI 7" TFT 800x480, PCAP Touch, 3x Ethernet, JMobile runtime       |
| eX710M  | EX710MU5P1  | HMI 10.1" TFT, 1280x800, PCAP Touch, 3x Ethernet, JMobile runtime  |
| eX712M  | EX712MU5P1  | HMI 12.3" TFT, 1920x720, PCAP Touch, 3x Ethernet, JMobile runtime  |
| eX715M  | EX715MU5P1  | HMI 15.6" TFT 1366x768, PCAP Touch, 3x Ethernet, JMobile runtime   |
| eX715MH | EX715MHU5P1 | HMI 15.6" TFT 1920x1080, PCAP Touch, 3x Ethernet, JMobile runtime  |
| eX721M  | EX721MU5P1  | HMI 21.5" TFT, 1920x1080, PCAP Touch, 3x Ethernet, JMobile runtime |

Web Version:

| Model   | Part Number | Description                                                             |
|---------|-------------|-------------------------------------------------------------------------|
| eX705M  | EX705MU5PW  | Web HMI 5" TFT 800x480, PCAP Touch, 2x Ethernet, Web browser            |
| eX707M  | EX707MU5PW  | Web HMI 7" TFT 800x480, PCAP Touch, 3x Ethernet, Web browser            |
| eX710M  | EX710MU5PW  | Web HMI 10.1" TFT, 1280x800, PCAP Touch, 3x Ethernet, Web browser       |
| eX712M  | EX712MU5PW  | Web HMI 12.3" TFT, 1920x720, PCAP Touch, 3x Ethernet, Web browser       |
| eX715M  | EX715MU5PW  | Web HMI 15.6" TFT 1366x768, PCAP Touch, 3x Ethernet ports, Web Browser  |
| eX715MH | EX715MHU5PW | Web HMI 15.6" TFT 1920x1080, PCAP Touch, 3x Ethernet ports, Web Browser |
| eX721M  | EX721MU5PW  | Web HMI 21.5" TFT, 1920x1080, PCAP Touch, 3x Ethernet, Web browser      |



# Safety notices

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The manual contains safety standards that must be respected for the personal safety and to avoid damage. All safety notices in this manual are specified as follows:

**INFORMATION!**

Respecting guidelines and regulations avoids errors.

**CAUTION!**

Respecting guidelines and regulations avoids injuries or damage to material

**WARNING!**

Respecting guidelines and regulations avoids severe injuries or damage to material

**DANGER!**

Respecting guidelines and regulations avoids life-risks



# 1 Products Overview

eX700M Series HMI products combine state-of-the-art connectivity features and top performance in a great design. Products have been designed as IoT edge devices with the combination of a powerful controller with networking capability and outstanding communication options including client/server OPC UA. They are the ideal choice for all demanding IoT edge applications in factory, marine and building automation.

The glass projected capacitive touchscreen and the brilliant displays with size up to 21.5" and resolution up to 1920x1080 guarantee great optical performance; with the support of multitouch gesture programming they can create the most natural human interfaces.

eX700M HMI products have been designed to run the JMobile software.

eX700M Web version HMI products combine state-of-the-art connectivity features and top browsing performance in a great design. They are the ideal choice for all demanding IoT edge applications in factory, marine and building automation where powerful and performing HTML5 web browser is needed.

eX700M Web version HMI products include a Chromium based HTML5 browser supporting kiosk mode operation. Supports Corvina Cloud secure connectivity with full network separation.

- Chromium based HTML5 Browser
- Easy to use browser setting application





## 2 Standards and Approvals

---

The products have been designed for use in an industrial environment in compliance with the 2014/30/EU EMC Directive.

The products have been designed in compliance with:

|                     |                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| EN 61000-6-4        | CISPR 22    Class A<br>CISPR 16-2-3                                                                                                               |
| EN 61000-6-2        | EN 61000-4-2<br>EN 61000-4-3<br>EN 61000-4-4<br>EN 61000-4-5<br>EN 61000-4-6<br>EN 61000-4-8<br>EN 61000-4-11<br>EN 61000-4-29<br><br>EN60945     |
| IECEX               | IECEX: IECEX ULD 17.0019X                                                                                                                         |
| IEC 60079-0         | Ex ec IIC T5...T4 Gc 0°C≤Tamb≤+50°C or -20°C≤Tamb≤+60°C                                                                                           |
| IEC 60079-7         | Ex tc IIIC T95°C Dc                                                                                                                               |
| IEC 60079-31        |                                                                                                                                                   |
| ATEX                | DEMKO 17 ATEX 1871X                                                                                                                               |
| EN IEC 60079-0      |  II 3G Ex ec IIC T5...T4 Gc 0°C≤Tamb≤+50°C or -20°C≤Tamb≤+60°C |
| EN IEC 60079-7+A1   | II 3D Ex tc IIIC T95°C Dc                                                                                                                         |
| CENELEC EN 60079-31 |                                                                                                                                                   |

The installation of these devices into the residential, commercial and light-industrial environments is allowed only in the case that special measures are taken in order to ensure conformity to EN 61000-6-3.

The products are in compliance with the Restrictions on Certain Hazardous Substances (RoHS) Directives 2011/65/EU + (EU) 2015/863.

In compliance with the above regulations the products are CE marked.

Products described in this manual may have other approvals and certificates.  
Please refer to product datasheets available at [www.exorint.com](http://www.exorint.com)

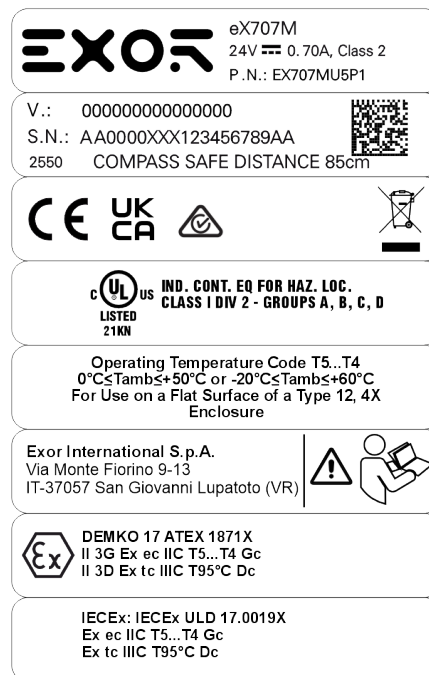


## 2.1 Product Identification

The product may be identified through a plate attached to the rear cover. You will have to know the type of unit you are using for correct usage of the information contained in the guide.

An example of this plate is shown in the figure below:

Note: the eX707M label is used as an example for eX700M Series and eX700M Web version.



|                           |                                                                                                                                                                                                               |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| product model name        | eX707M                                                                                                                                                                                                        |
| product part number       | EX707MU5P1                                                                                                                                                                                                    |
| year/week of production   | 2550                                                                                                                                                                                                          |
| serial number             | AA0000XXX123456789AA                                                                                                                                                                                          |
| version id of the product | 000000000000000                                                                                                                                                                                               |
| manufacturer address      | Exor International S.p.A.<br>Via Monte Fiorino 9-13<br>IT-37057 San Giovanni Lupatoto (VR)                                                                                                                    |
| ATEX Marking              | DEMKO 17 ATEX 1871X<br> II 3G Ex ec IIC T5...T4 Gc 0°C ≤ Tamb ≤ +50°C or -20°C ≤ Tamb ≤ +60°C<br>II 3D Ex tc IIIC T95°C Dc |
| IECEx Marking             | IECEx: IECEx ULD 17.0019X<br>Ex ec IIC T5...T4 Gc 0°C ≤ Tamb ≤ +50°C or -20°C ≤ Tamb ≤ +60°C<br>Ex tc IIIC T95°C Dc                                                                                           |



## 3 Technical Specifications

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|                               |                                                                     |
|-------------------------------|---------------------------------------------------------------------|
| <b>Touchscreen technology</b> | Projected capacitive                                                |
| <b>Back-up battery</b>        | 3V 50mAh Lithium, rechargeable, not user-replaceable, model VL2330. |
| <b>Fuse</b>                   | Automatic                                                           |
| <b>Serial Port</b>            | RS-232, RS-485, RS-422 software configurable                        |
| <b>Flash</b>                  | 8GB                                                                 |
| <b>RAM</b>                    | 2GB                                                                 |
| <b>Hardware clock</b>         | Clock/Calendar with back-up battery                                 |
| <b>Accuracy RTC (at 25°C)</b> | <100ppm                                                             |

### *Environmental Conditions*

|                                                            |                                                                                                           |                                               |
|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| <b>Operating temperature (surrounding air temperature)</b> | -20 ÷ +60°C (vertical installation)<br>Plug-in modules and USB devices may limit max temperature to +50°C | EN 60068-2-14                                 |
| <b>Storage temperature</b>                                 | -20°C to +70°C                                                                                            | EN 60068-2-1<br>EN 60068-2-2<br>EN 60068-2-14 |
| <b>Operating and storage humidity</b>                      | 5 - 85% RH, non condensing                                                                                | EN 60068-2-30                                 |
| <b>Vibrations</b>                                          | 5 - 9 Hz, 7 mm <sub>pp</sub><br>9 - 150 Hz, 1g                                                            | EN 60068-2-6                                  |
| <b>Shock</b>                                               | ± 50 g, 11ms, 3 pulses per axis                                                                           | EN 60068-2-27                                 |
| <b>Protection class</b>                                    | IP66 (front), IP20 (rear) not UL evaluated                                                                | EN 60529                                      |

### *Electromagnetic Compatibility (EMC)*

|                                                                           |                                                                                                                       |                          |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Radiated disturbance test</b>                                          | Class A                                                                                                               | CISPR 22<br>CISPR 16-2-3 |
| <b>Electrostatic discharge immunity test</b>                              | ± 8 kV (air electrostatic discharge)<br>± 4 kV (contact electrostatic discharge)                                      | EN 61000-4-2             |
| <b>Radiated, radio-frequency, electromagnetic field immunity test</b>     | 80 MHz ÷ 6 GHz, 10V/m<br>1.4 GHz ÷ 2 GHz, 3 V/m<br>2 GHz ÷ 2.7 GHz, 1 V/m                                             | EN 61000-4-3             |
| <b>Burst immunity test</b>                                                | ± 2 KV dc power port<br>± 1 KV signal line                                                                            | EN 61000-4-4             |
| <b>Surge immunity test</b>                                                | ± 0.5 KV dc power port (line to earth)<br>± 0.5 KV dc power port (line to line)<br>± 1 KV signal line (line to earth) | EN 61000-4-5             |
| <b>Immunity to conducted disturbances induced by radiofrequency field</b> | 0.15 ÷ 80 MHz, 10V                                                                                                    | EN 61000-4-6             |
| <b>Power frequency magnetic field immunity test</b>                       | Enclosure, 50/60Hz, 30A/m                                                                                             | EN 61000-4-8             |

**Voltage dips, short interruptions and voltage variations immunity test**

|                        |                                                                  |
|------------------------|------------------------------------------------------------------|
| Port: AC mains; Level: |                                                                  |
| 100% duration:         | 1 CYCLE AND 250 CYCLES (50HZ);<br>1 CYCLE AND 300 CYCLES (60HZ); |
| 40% duration:          | 10 CYCLES (50HZ);<br>12 CYCLES (60HZ);                           |
| 70% duration:          | 25 CYCLES (50HZ);<br>30 CYCLES (60HZ);                           |
| Phase: 0°-180°         |                                                                  |

Test executed on the 230Vac side of the Exor International S.p.A. Power Supply

EN 61000-4-11

|                        |                      |
|------------------------|----------------------|
| Port: DC mains; Level: |                      |
| 0% duration:           | 10MS 20 SPACES BY 1S |

Test executed on the 24Vdc of the EUT

EN 61000-4-29

**Durability information****Backlight service life (LED type)**

40000 Hrs. or more  
(Time of continuous operation until the brightness of the backlight reaches 50% of the rated value when the surrounding air temperature is 25°C) - see Note 1

Note 1: Extended use in environments where the surrounding air temperature is 40°C or higher may degrade backlight quality/reliability/durability.

**Surface resistance**

Chemical resistance of the front glass for an exposure time of 24 hours without visible changes:

- Betadine (10% Povidone Solution)
- Cola
- Electrode Gel/Paste
- Hydrogen Peroxide (3% Solution)
- NaCl (0.9% Solution)
- Coffee
- Dextrose (5% Glucose Solution)
- Hydrogen chloride (0.5% Solution PH=1)
- Isopropyl Alcohol
- Sodium Hypochlorit
- Ethyl Alcohol (70%-90%)
- Quaternary ammonium compound

**PCAP Touch Screen Operation with Gloves**

The touchscreen display is based on projected capacitive (PCAP) technology and is suitable for operation with or without gloves. Due to the wide variety of commercially available gloves, however, EXOR cannot guarantee compatibility with all types. Functional tests were performed using the following types of gloves:

- Tight-fitting elastomeric gloves (e.g. latex), with an indicative thickness of less than 0.2 mm
- Dissipative textile (ESD) gloves, with an indicative thickness of up to 0.8 mm
- Light work gloves with a thin coating, with an overall thickness of up to approximately 1.1 mm

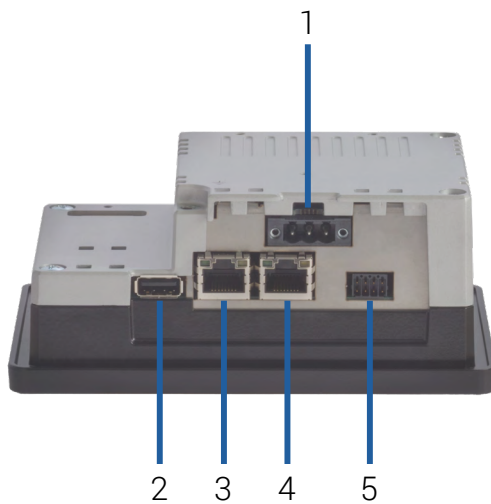
The use of thicker, insulating, multilayer, or rigid-coated gloves may reduce or prevent correct touch detection.



## 4 eX700M

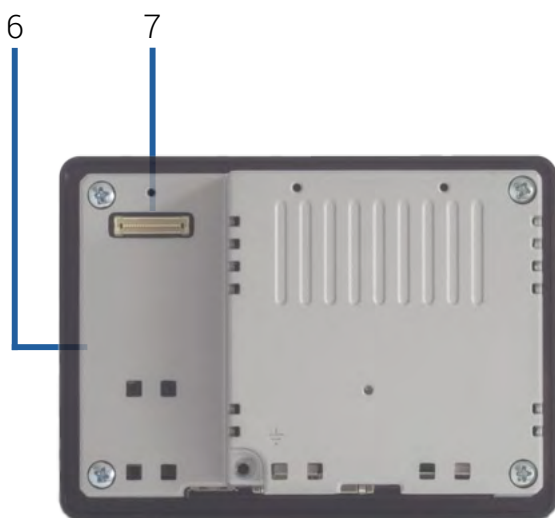
### 4.1 Overview

eX705M



#### SIDE

- 1 Power Supply
- 2 USB Port V2.0, max. 500mA (For maintenance only)
- 3 Ethernet Port 0 (10/100 Mb)
- 4 Ethernet Port 1 (10/100 Mb)
- 5 Serial Port

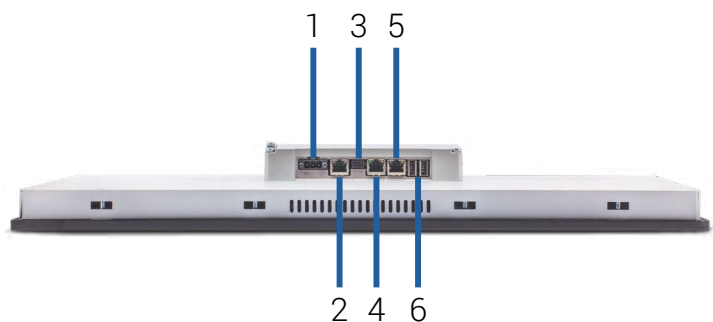


#### BACK SIDE

- 6 SD Card slot
- 7 Expansion slot for Plugging module

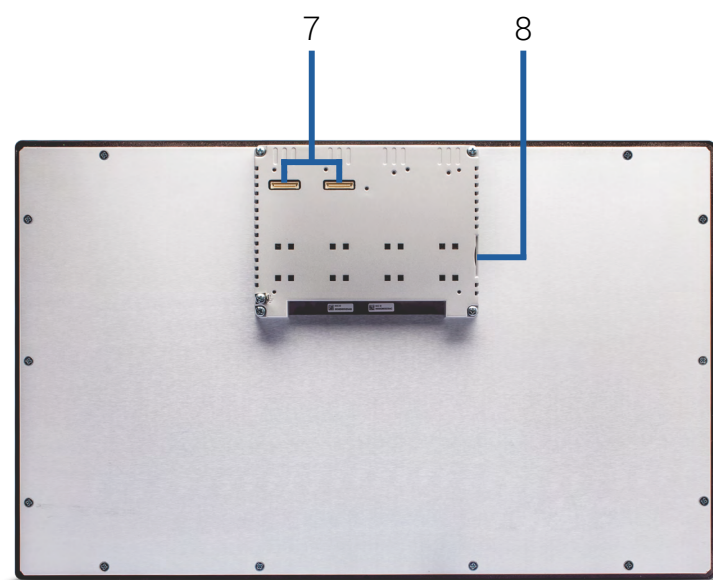


eX707M, eX710M, eX715M, eX715MH, eX721M



#### SIDE

- 1 Power Supply
- 2 Ethernet Port 0 (10/100/1000 Mb)
- 3 Serial Port
- 4 Ethernet Port 1 (10/100 Mb)
- 5 Ethernet Port 2 (10/100 Mb)
- 6 USB Port V2.0, max. 500mA (For maintenance only)



#### BACK SIDE

- 7 2x Expansion slot for Plugging module
- 8 SD Card slot



## 4.2 Technical data

| System Resources             | eX705M                                                                                              | eX707M                                                                                              | eX710M                                                                                              |
|------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Display - Colors             | 5" TFT 16:9 LED - 64K                                                                               | 7" TFT 16:9 LED - 16M                                                                               | 10.1" TFT 16:9 LED - 16M                                                                            |
| Resolution                   | 800x480, WVGA                                                                                       | 800x480, WVGA                                                                                       | 1280x800, WVGA                                                                                      |
| Brightness                   | 300 Cd/m2 typ.                                                                                      | 500 Cd/m2 typ.                                                                                      | 500 Cd/m2 typ.                                                                                      |
| Dimming                      | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 |
| Touchscreen                  | True Glass Projected Capacitive, Multitouch                                                         | True Glass Projected Capacitive, Multitouch                                                         | True Glass Projected Capacitive, Multitouch                                                         |
| CPU                          | 64-bit RISC quad core - 1.6GHz                                                                      | 64-bit RISC quad core - 1.6GHz                                                                      | 64-bit RISC quad core - 1.6GHz                                                                      |
| Operating System             | Linux                                                                                               | Linux                                                                                               | Linux                                                                                               |
| Flash Disk                   | 4 GB (eMMC pSLC)                                                                                    | 4 GB (eMMC pSLC)                                                                                    | 4 GB (eMMC pSLC)                                                                                    |
| RAM                          | 2 GB                                                                                                | 2 GB                                                                                                | 2 GB                                                                                                |
| FRAM                         | 64 KB                                                                                               | 64 KB                                                                                               | 64 KB                                                                                               |
| Real Time Clock              | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 |
| Interface                    |                                                                                                     |                                                                                                     |                                                                                                     |
| Ethernet Port                | 2 (port 0 - 10/100, port 1 - 10/100)                                                                | 3 (port 0 - 10/100/1000, port 1 - 10/100, port 2 - 10/100)                                          | 3 (port 0 - 10/100/1000, port 1 - 10/100, port 2 - 10/100)                                          |
| USB Port (*)                 | 1 (Host V2.0, max. 500 mA)                                                                          | 2 (Host V2.0, max. 500 mA)                                                                          | 2 (Host V2.0, max. 500 mA)                                                                          |
| Serial Port                  | 1 (RS-232, RS-485, RS-422, software configurable) Max 2 serial ports using plug-in modules.         | 1 (RS-232, RS-485, RS-422, software configurable). Max 3 serial ports using plug-in modules.        | 1 (RS-232, RS-485, RS-422, software configurable). Max 3 serial ports using plug-in modules.        |
| SD Card                      | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 |
| Buzzer                       | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 |
| Expansion                    | 1 slot for plug in modules                                                                          | 2 slot for plug in modules                                                                          | 2 slot for plug in modules                                                                          |
| Ratings                      |                                                                                                     |                                                                                                     |                                                                                                     |
| Power Supply (**)            | 24 Vdc (10 to 32 Vdc)                                                                               | 24 Vdc (10 to 32 Vdc)                                                                               | 24 Vdc (10 to 32 Vdc)                                                                               |
| Power Consumption            | 0.6 A Max. Class 2                                                                                  | 0.7 A Max. Class 2                                                                                  | 1.0 A Max. Class 2                                                                                  |
| Input Protection             | Electronic                                                                                          | Electronic                                                                                          | Electronic                                                                                          |
| Battery                      | Rechargeable Lithium battery, not user-replaceable                                                  | Rechargeable Lithium battery, not user-replaceable                                                  | Rechargeable Lithium battery, not user-replaceable                                                  |
| Environment Conditions       |                                                                                                     |                                                                                                     |                                                                                                     |
| Operating Temperature        | -20° to +60 °C (vertical installation). Plug-in and USB devices may limit max temperature to +50 °C | -20° to +60 °C (vertical installation). Plug-in and USB devices may limit max temperature to +50 °C | -20° to +60 °C (vertical installation). Plug-in and USB devices may limit max temperature to +50 °C |
| Storage Temperature          | -20°C to +70°C                                                                                      | -20°C to +70°C                                                                                      | -20°C to +70°C                                                                                      |
| Operating / Storage Humidity | 5-85% RH, non condensing                                                                            | 5-85% RH, non condensing                                                                            | 5-85% RH, non condensing                                                                            |
| Conformal Coating            | Yes, printed circuit boards                                                                         | Yes, printed circuit boards                                                                         | Yes, printed circuit boards                                                                         |
| Protection Class             | IP66 (front), IP20 (rear) - Type: 12, 4X                                                            | IP66 (front), IP20 (rear) - Type: 12, 4X                                                            | IP66 (front), IP20 (rear) - Type: 12, 4X                                                            |
| Dimensions and Weights       |                                                                                                     |                                                                                                     |                                                                                                     |
| Lenght                       | 147x107 mm                                                                                          | 187x147 mm                                                                                          | 282x197 mm                                                                                          |
| Width                        | 136x96 mm                                                                                           | 176x136 mm                                                                                          | 271x186 mm                                                                                          |
| Depth                        | 52+8 mm                                                                                             | 47+8 mm                                                                                             | 56+8 mm                                                                                             |
| Weight                       | 0.8 Kg                                                                                              | 1.1 Kg                                                                                              | 1.7 Kg                                                                                              |

\* for maintenance only

\*\* For applications requiring compliance with EN 61131-2 and specifically in reference to 10 ms voltage dips (according to EN 61000-4-29), the lower power supply voltage limit is 19.2 Vdc.

\*\*\* not UL evaluated



| System Resources              | eX712M                                                                                              | eX715M                                                                                              | eX715MH                                                                                             | eX721M                                                                                              |
|-------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Display - Colors              | 12.3" TFT LED - 16M                                                                                 | 15.6" TFT LED - 16M                                                                                 | 15.6" TFT 16:9 LED - 16M                                                                            | 21.5" TFT 16:9 LED - 16M                                                                            |
| Resolution                    | 1920x720, HD                                                                                        | 1366x768, HD                                                                                        | 1920x1080, Full HD                                                                                  | 1920x1080, full HD                                                                                  |
| Brightness                    | 600 Cd/m2 typ.                                                                                      | 400 Cd/m2 typ.                                                                                      | 350 Cd/m2 typ.                                                                                      | 300 Cd/m2 typ.                                                                                      |
| Dimming                       | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 |
| Touchscreen                   | True Glass Projected Capacitive, Multitouch                                                         | True Glass Projected Capacitive, Multitouch                                                         | True Glass Projected Capacitive, Multitouch                                                         | True Glass Projected Capacitive, Multitouch                                                         |
| CPU                           | 64-bit RISC quad core - 1.6GHz                                                                      | 64-bit RISC quad core - 1.6GHz                                                                      | 64-bit RISC quad core - 1.6GHz                                                                      | 64-bit RISC quad core - 1.6GHz                                                                      |
| Operating System              | Linux                                                                                               | Linux                                                                                               | Linux                                                                                               | Linux                                                                                               |
| Flash Disk                    | 4 GB (eMMC pSLC)                                                                                    | 4 GB (eMMC pSLC)                                                                                    | 4 GB (eMMC pSLC)                                                                                    | 4 GB (eMMC pSLC)                                                                                    |
| RAM                           | 2 GB                                                                                                | 2 GB                                                                                                | 2 GB                                                                                                | 2 GB                                                                                                |
| FRAM                          | 64 KB                                                                                               | 64 KB                                                                                               | 64 KB                                                                                               | 64 KB                                                                                               |
| Real Time Clock               | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 |
| <b>Interface</b>              |                                                                                                     |                                                                                                     |                                                                                                     |                                                                                                     |
| Ethernet Port                 | 3 (port 0 - 10/100/1000, port 1 - 10/100, port 2 - 10/100)                                          | 3 (port 0 - 10/100/1000, port 1 - 10/100, port 2 - 10/100)                                          | 3 (port 0 - 10/100/1000, port 1 - 10/100, port 2 - 10/100)                                          | 3 (port 0 - 10/100/1000, port 1 - 10/100, port 2 - 10/100)                                          |
| USB Port (*)                  | 2 (Host V2.0, max. 500 mA)                                                                          | 2 (Host V2.0, max. 500 mA)                                                                          | 2 (Host V2.0, max. 500 mA)                                                                          | 2 (Host V2.0, max. 500 mA)                                                                          |
| Serial Port                   | 1 (RS-232, RS-485, RS-422, software configurable). Max 3 serial ports using plug-in modules.        | 1 (RS-232, RS-485, RS-422, software configurable). Max 3 serial ports using plug-in modules.        | 1 (RS-232, RS-485, RS-422, software configurable). Max 3 serial ports using plug-in modules.        | 1 (RS-232, RS-485, RS-422, software configurable). Max 3 serial ports using plug-in modules.        |
| SD Card                       | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 |
| Buzzer                        | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 | Yes                                                                                                 |
| Expansion                     | 2 slot for plug in modules                                                                          | 2 slot for plug in modules                                                                          | 2 slot for plug in modules                                                                          | 2 slot for plug in modules                                                                          |
| <b>Ratings</b>                |                                                                                                     |                                                                                                     |                                                                                                     |                                                                                                     |
| Power Supply (**)             | 24 Vdc (10 to 32 Vdc)                                                                               | 24 Vdc (10 to 32 Vdc)                                                                               | 24 Vdc (10 to 32 Vdc)                                                                               | 24 Vdc (10 to 32 Vdc)                                                                               |
| Power Consumption             | 1.1 A Max. Class 2                                                                                  | 1.2 A Max. Class 2                                                                                  | 1.1A Max. Class 2                                                                                   | 1.7 A Max. Class 2                                                                                  |
| Input Protection              | Electronic                                                                                          | Electronic                                                                                          | Electronic                                                                                          | Electronic                                                                                          |
| Battery                       | Rechargeable Lithium battery, not user-replaceable                                                  | Rechargeable Lithium battery, not user-replaceable                                                  | Rechargeable Lithium battery, not user-replaceable                                                  | Rechargeable Lithium battery, not user-replaceable                                                  |
| <b>Environment Conditions</b> |                                                                                                     |                                                                                                     |                                                                                                     |                                                                                                     |
| Operating Temperature         | -20° to +60 °C (vertical installation). Plug-in and USB devices may limit max temperature to +50 °C | -20° to +60 °C (vertical installation). Plug-in and USB devices may limit max temperature to +50 °C | -20° to +60 °C (vertical installation). Plug-in and USB devices may limit max temperature to +50 °C | -20° to +60 °C (vertical installation). Plug-in and USB devices may limit max temperature to +50 °C |
| Storage Temperature           | -20°C to +70°C                                                                                      | -20°C to +70°C                                                                                      | -20°C to +70°C                                                                                      | -20°C to +70°C                                                                                      |
| Operating / Storage Humidity  | 5-85% RH, non condensing                                                                            | 5-85% RH, non condensing                                                                            | 5-85% RH, non condensing                                                                            | 5-85% RH, non condensing                                                                            |
| Conformal Coating             | Yes, printed circuit boards                                                                         | Yes, printed circuit boards                                                                         | Yes, printed circuit boards                                                                         | Yes, printed circuit boards                                                                         |
| Protection Class              | IP66 (front), IP20 (rear) - Type: 12, 4X                                                            | IP66 (front), IP20 (rear) - Type: 12, 4X                                                            | IP66 (front), IP20 (rear) - Type: 12, 4X                                                            | IP66 (front), IP20 (rear) - Type: 12, 4X                                                            |
| <b>Dimensions and Weights</b> |                                                                                                     |                                                                                                     |                                                                                                     |                                                                                                     |
| Lenght                        | 344.5x163 mm                                                                                        | 422x267 mm                                                                                          | 422x267 mm                                                                                          | 552x347 mm                                                                                          |
| Width                         | 332.5x152 mm                                                                                        | 411x256 mm                                                                                          | 411x256 mm                                                                                          | 541x336 mm                                                                                          |
| Depth                         | 49+8.5 mm                                                                                           | 56+8 mm                                                                                             | 56+8 mm                                                                                             | 56+8 mm                                                                                             |
| Weight                        | 1.8 Kg                                                                                              | 4.1 Kg                                                                                              | 4.1 Kg                                                                                              | 6.1 Kg                                                                                              |

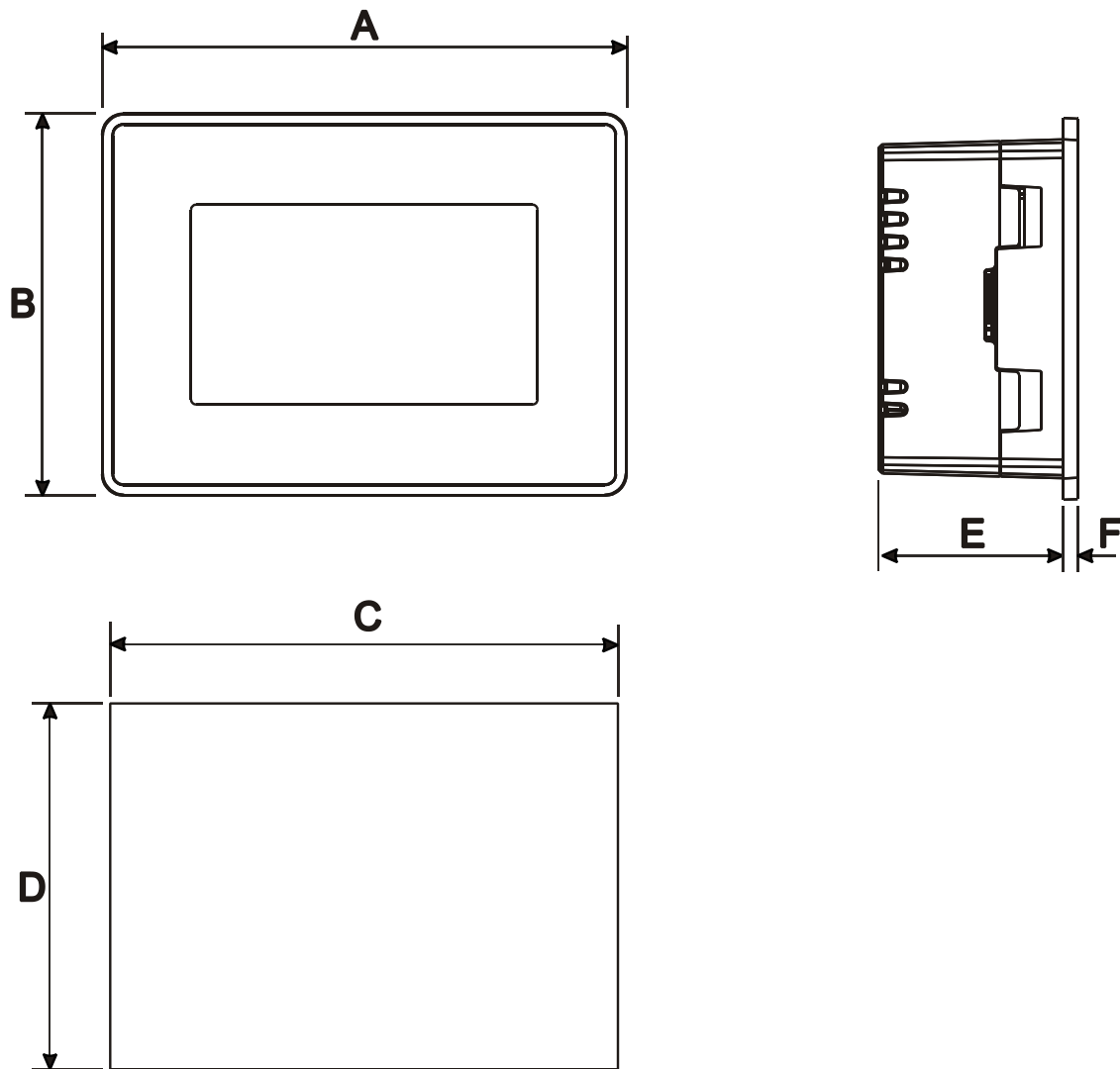
\* for maintenance only

\*\* For applications requiring compliance with EN 61131-2 and specifically in reference to 10 ms voltage dips (according to EN 61000-4-29), the lower power supply voltage limit is 19.2 Vdc.

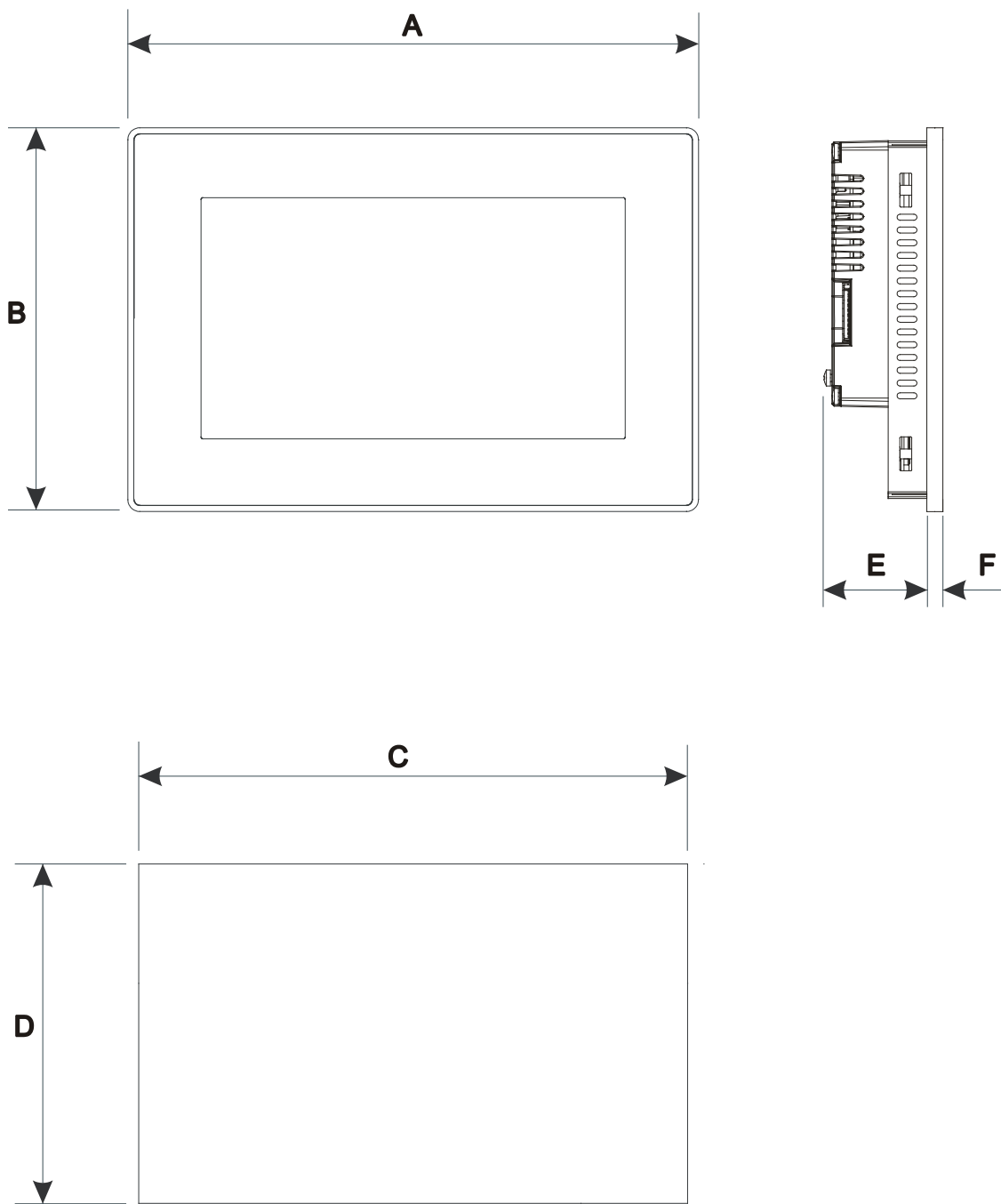
\*\*\* not UL evaluated



## 4.3 Mechanical dimensions



| Model  | A           | B           | C           | D          | E          | F         |
|--------|-------------|-------------|-------------|------------|------------|-----------|
| eX705M | 147mm/5.78" | 107mm/4.21" | 136mm/5.35" | 96mm/3.78" | 56mm/2.40" | 8mm/0.31" |



| Model   | A              | B            | C              | D            | E          | F         |
|---------|----------------|--------------|----------------|--------------|------------|-----------|
| eX707M  | 187mm/7.36"    | 147mm/5.79"  | 176mm/6.90"    | 136mm/5.35"  | 47mm/1.85" | 8mm/0.31" |
| eX710M  | 282mm/11.10"   | 197mm/7.80"  | 271mm/10.67"   | 186mm/7.32"  | 56mm/2.20" | 8mm/0.31" |
| eX712M  | 344,5mm/13.56" | 163mm/6.41"  | 332,5mm/13,09" | 163mm/6,41"  | 49mm/1,92" | 8mm/0.31" |
| eX715M  | 422mm/16.60"   | 267mm/10.50" | 411mm/16.18"   | 256mm/10.00" | 56mm/2.20" | 8mm/0.31" |
| eX715MH | 422mm/16.60"   | 267mm/10.50" | 411mm/16.18"   | 256mm/10.00" | 56mm/2.20" | 8mm/0.31" |
| eX721M  | 552mm/21.73"   | 347mm/13.66" | 541mm/21.30"   | 336mm/13.22" | 56mm/2.20" | 8mm/0.31" |



## 5 Optional plugin module identification

Note: the PLCM01 label is used as an example for PLCM01, PLCM09X, PLI003



|                           |                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------|
| product model name        | PLCM01                                                                                     |
| product part number       | PLCM01U0P1                                                                                 |
| year/week of production   | 250                                                                                        |
| serial number             | AA0000XXX123456789AA                                                                       |
| version id of the product | 0000000000000000                                                                           |
| manufacturer address      | Exor International S.p.A.<br>Via Monte Fiorino 9-13<br>IT-37057 San Giovanni Lupatoto (VR) |



Below you can find relation between modules ATEX and IECEx certified and max number of modules that can be used into eX700M series panels, based on their Interface Type:

| Module    | Application       | Max Modules                        | Interface Type | Bus Extension connector |
|-----------|-------------------|------------------------------------|----------------|-------------------------|
| PLCM01    | CAN               | 1 for eX705M<br>2 for other panels | CAN            | Y                       |
| PLCM01-NE | CAN               | 1 for eX705M<br>2 for other panels | CAN            | N                       |
| PLCM09X   | 3G modem          | 1                                  | -              | Y                       |
| PLIO03    | Multifunction I/O | 1                                  | SPI            | N                       |

PLCM01 / PLCM01-NE: Operating temperature -20°C to 60°C

PLCM09X: Operating temperature -20°C to 60°C

PLIO03: with part number PLIO03xxxxY where:  
- Y≤2 is operating temperature range 0°C≤Tamb≤+50°C with Operating Temperature Code T5 (vertical installation), 12-30VDC  
- Y>2 is operating temperature range -20°C≤Tamb≤+60°C with Operating Temperature Code T4 (vertical installation), 12-30VDC



Note the above different "Operating Temperature Code" for different part number of PLIO03 module.

PLCM and PLIO03 electrical ratings:

- PLCM01: For electrical rating refers to the host eX700 models.
- PLCM09X: 2xDigital Inputs voltage 12÷30 Vdc, 3mA; 2xDigital Outputs voltage 12÷30 Vdc, 0.5A
- PLIO03: 20xDigital Inputs voltage 12÷30 Vdc; 12xDigital Outputs voltage 12÷30 Vdc, 0.5A; 4xAnalog inputs 0÷10 Vdc, 4-20mA; 4xAnalog outputs: 0÷10 Vdc, 4-20mA



Below you can find relation between modules and max number of modules that can be used into eX series 700M panels, based on their Interface Type:

| Module | Application       | Max Modules | Interface Type | Bus Extension connector |
|--------|-------------------|-------------|----------------|-------------------------|
| PLCM02 | KNX               | 1           | Serial         | N                       |
| PLCM03 | Serial RS232      | 2           | Serial         | Y                       |
| PLCM04 | Serial RS485      | 2           | Serial         | Y                       |
| PLCM06 | Profibus DP       | 1           | SPI            | N                       |
| PLCM10 | 4G wireless modem | 1           | -              | Y                       |
| PLIO04 | Multifunction I/O | 1           | SPI            | N                       |
| PLIO06 | Compact I/O       | 2           | SPI            | N                       |
| PLIO07 | Compact I/O       | 2           | SPI            | N                       |

Max modules refers to max number of modules can be plugged into the HMI (all slots).

If you are planning to use PLCM03 and PLCM04 (additional serial ports) you will obtain following "COM - Slot#" association:

- a module plugged in Slot#1 or into Slot#2 will be COM2,
- a module plugged in Slot#3 or into Slot#4 will be COM3.

If you are planning to use two PLCM01 (CAN interface) you will obtain following Slot# association:

- a module plugged in Slot#1 or into Slot#2 will be the CanPort 0,
- a module plugged in Slot#3 or into Slot#4 will be the CanPort 1.



## 6 Installation Guidelines

---

### 6.1 Installation Environment

Avoid prolonged exposition to direct sunlight to avoid the risk of overheating the device.

The equipment is not intended for installation in contact with corrosive chemical compounds. Check the resistance of the front panel to a specific compound before installation.

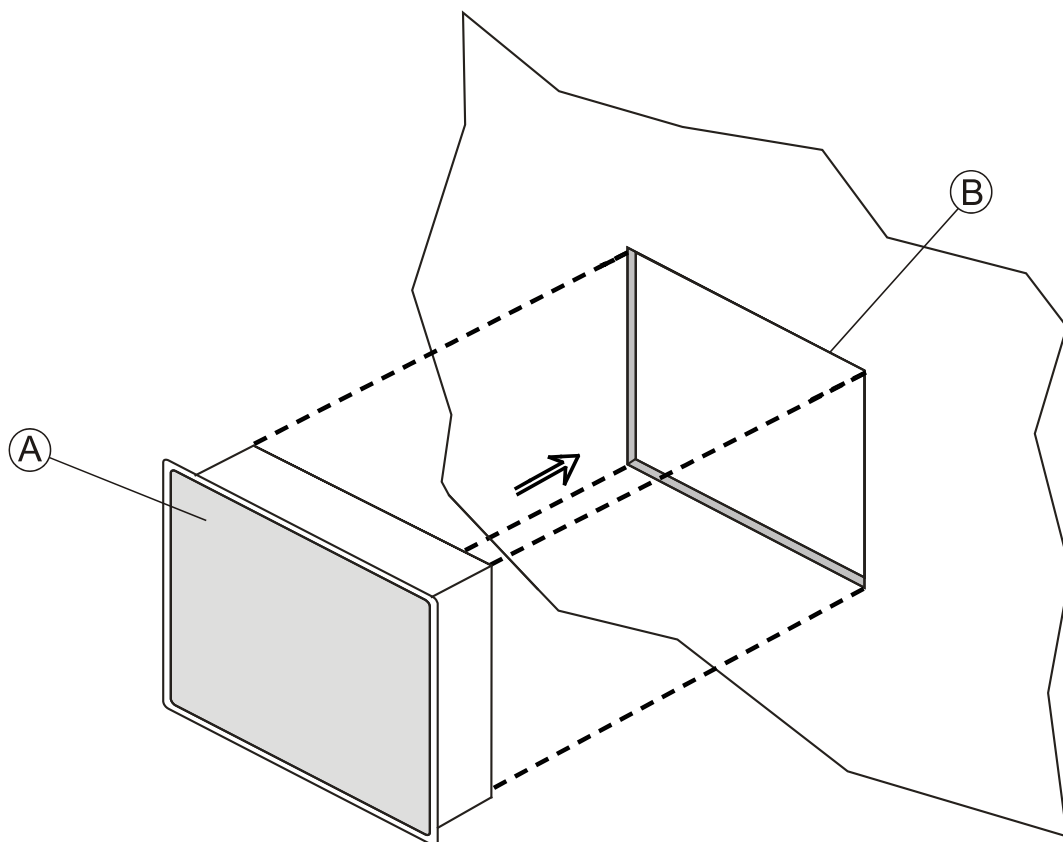
Do not use tools of any kind (screwdrivers, etc.) to operate the touch screen of the panel.

In order to meet the front panel protection classifications, proper installation procedure must be followed:

- the borders of the cutout must be flat
- screw up each fixing screw until the plastic bezel corner get in contact with the panel.
- the cutout for the panel must be of the dimensions indicated in this manual.

The IP66 is guaranteed only if:

- max deviation from the plane surface to the cut-out:  $\leq 0.5$  mm
- thickness of the case where is mounted the equipment: from 1,5 mm to 6 mm
- max surface roughness where the gasket is applied:  $\leq 120$   $\mu$ m



- A. HMI  
B. Installation cut-out



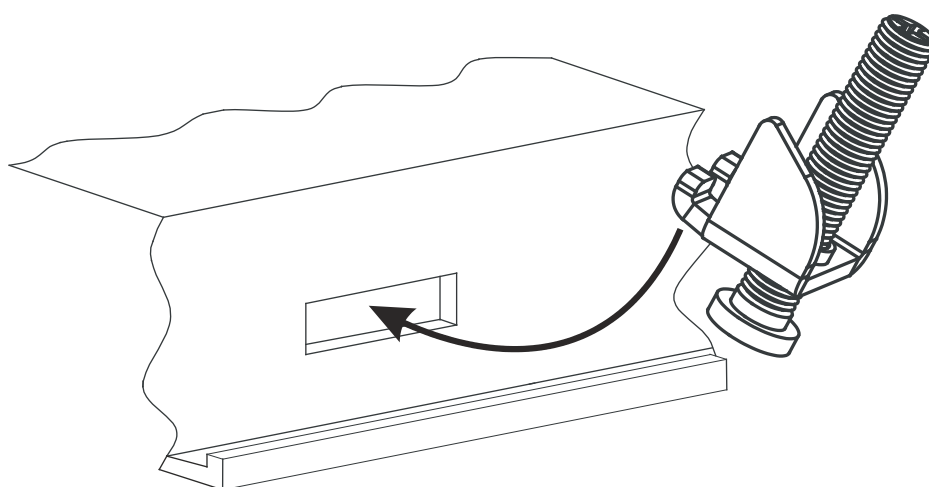
## 6.2 Safety Instruction



For all installation notes, please refer to the Installation Guide provided with the product.

## 6.3 Installation Procedure

Place the fixing brackets contained in the fixing kit as shown in figure



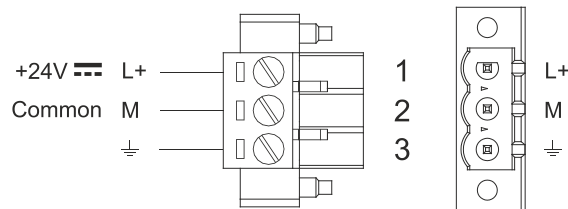
### **CAUTION!**

Tightening torque: 130 Ncm or screw each fixing screw until the bezel corner gets in contact with the panel.



## 6.4 General Connection Diagram

### 6.4.1 Power Supply



| Pin | Description |
|-----|-------------|
| 1   | +24V        |
| 2   | 0           |
| 3   | ↓           |

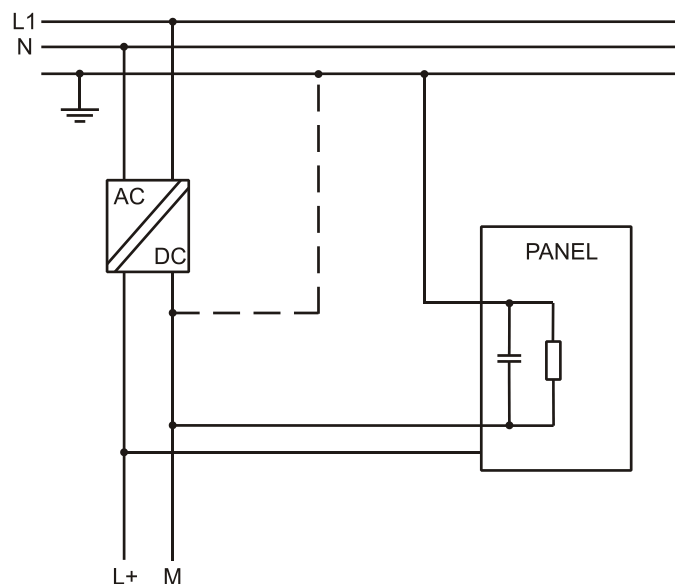
#### Connector technical characteristics:

- Compatible wire gauge and diameter range: IEC: 0.2 – 4 mm<sup>2</sup> / UL: AWG 26 - AWG 12
- Stripping length: 7 mm
- Compatible terminal types: DIN 46228-4, w. plastic collar ferrule min. 0.2 mm<sup>2</sup>/max. 2.5 mm<sup>2</sup>; DIN 46228-1, w. Wire and ferrule min. 0.2 mm<sup>2</sup>/max. 4 mm<sup>2</sup>
- Screw tightening torque: min. 0.4 Nm/max 0.5 Nm; screw flange min. 0.2 Nm/max 0.25 Nm
- Screwdriver blade size: 0.6 x 3.5 mm, PH1, PZ1
- Replacement terminal block part number: 1944340000 - Weidmüller



- Extra low voltage power supply / Limited power source.
- Do not open the cabinet while the system is powered up.
- Don't open the panel rear cover when the power supply is applied.
- Ensure that the power supply has enough power capacity for the operation of the equipment.

The unit must be grounded at all times via terminal 3 on the power terminal.

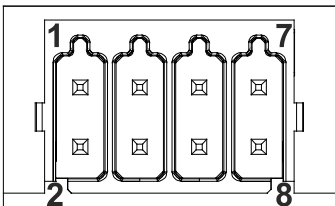




### 6.4.2 Serial Port

The serial port is used to communicate with the PLC or with another type of controller.  
Different electrical standards are available for the signals in the PLC port connector: RS-232, RS-422, RS-485.

The serial port is software programmable. Make sure you select the appropriate interface in the programming software.



**RS-232**

| Pin | Description |
|-----|-------------|
| 1   | RX          |
| 2   | TX          |
| 3   | CTS         |
| 4   | RTS         |
| 5   | +5 V output |
| 6   | GND         |
| 7   | -           |
| 8   | SHIELD      |

**RS-422 / RS-485\***

| Pin | Description |
|-----|-------------|
| 1   | CHB-        |
| 2   | CHA-        |
| 3   | CHB+        |
| 4   | CHA+        |
| 5   | +5 V output |
| 6   | GND         |
| 7   | -           |
| 8   | SHIELD      |

\* To operate in RS-485 pins 1-2 and 3-4 must be connected externally.

The communication cable must be chosen for the type of device being connected.

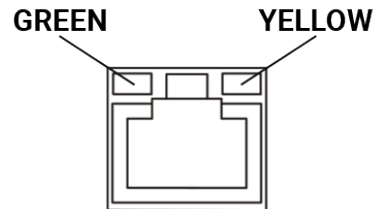
**Connector technical characteristics:**

- Compatible wire gauge and diameter range: IEC: 0.14 - 0.5 mm<sup>2</sup> / UL: AWG 24 - AWG 20
- Stripping length: 7 mm
- Compatible terminal types: DIN 46228-4, w. plastic collar ferrule min. 0.2 mm<sup>2</sup> / max. 2.5 mm<sup>2</sup>; DIN 46228-1, w. wire and ferrule min. 0.2 mm<sup>2</sup> / max. 4 mm<sup>2</sup>
- Replacement terminal block part number: 1715736 – Phoenix Contact



### 6.4.3 Ethernet Port

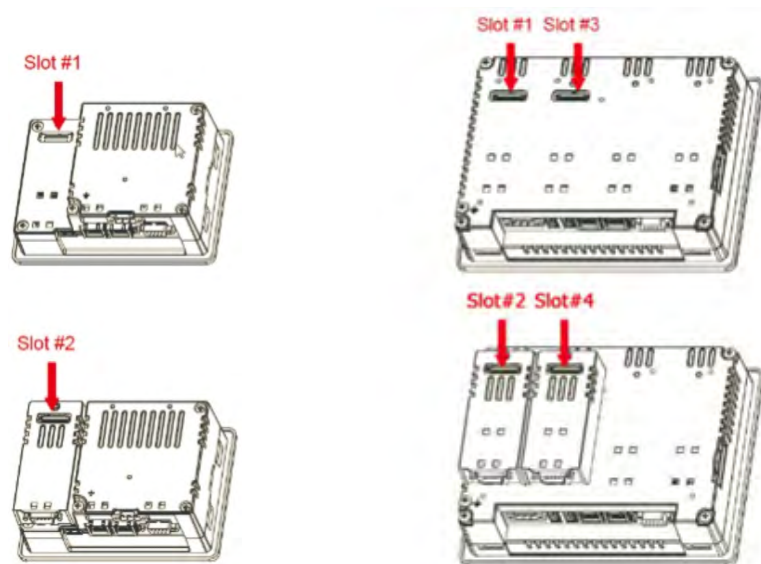
The Ethernet port have two LED indicators for status. Please see description below.



| Green               | Yellow | Description                                                                                               |
|---------------------|--------|-----------------------------------------------------------------------------------------------------------|
| ON                  | OFF    | No LAN cable connected                                                                                    |
| Blink (Link Active) | ON     | LAN cable connected with:<br>ETH0: 1000 Mbit/s link<br>ETH1/2: 100 Mbit/s link<br>eX705M: 100 Mbit/s link |
| Blink (Link Active) | OFF    | LAN cable connected with:<br>ETH0: 10/100 Mbit/s link<br>ETH1/2: 10 Mbit/s link<br>eX705M: 10 Mbit/s link |

### 6.4.4 Optional plugin module

eX700M series have several optional plugin module, multiple modules configurations are possible.



Slot#2 and Slot#4 are available only if plugin module has the “bus extension connector”.

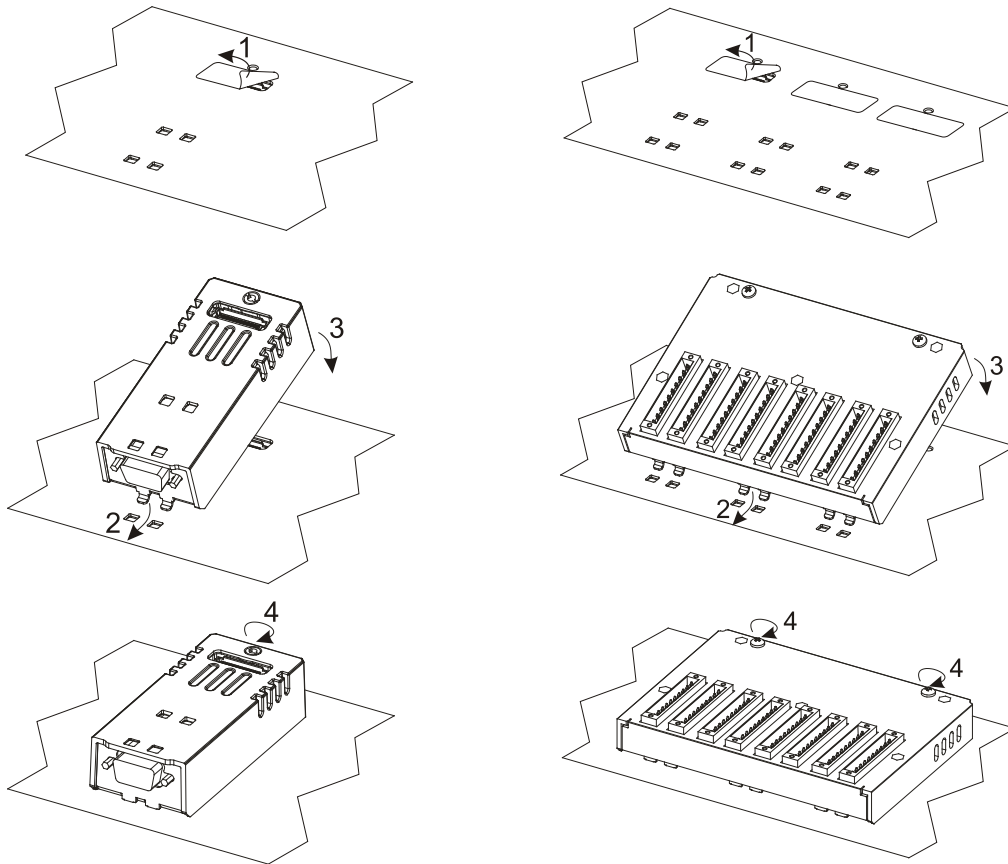
Each slot carries three communication channels:

- 1 serial interface
- 1 CAN interface
- 1 SPI interface
- 1 2G/3G interface

Note: It is not possible to stack two modules that are using the same type of interface.



### 6.4.5 Optional plugin module installation procedure





## 7 Battery

These devices are equipped with rechargeable Lithium battery, not user-replaceable.

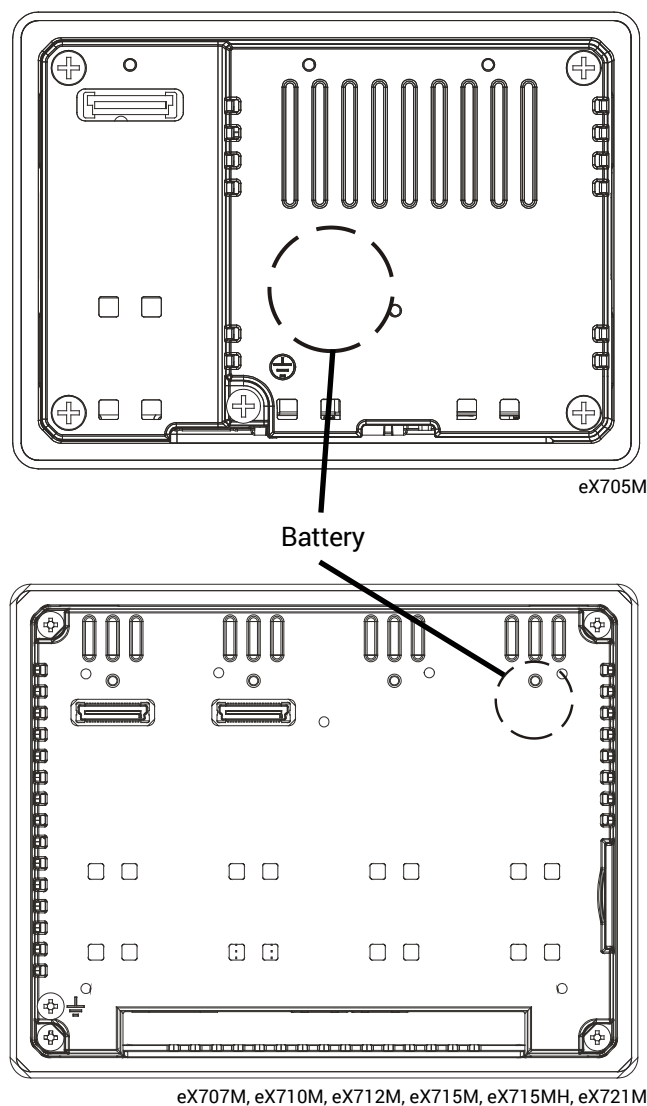
The following information is maintained by the battery:

- hardware real-time clock (date and time)

Charge:

At first installation must be charged for 48 hours.

When the battery is fully charged, it ensures a period of 3 months of data back-up at 25°C.



Note the above different “Operating Temperature Code” for different part number of PLIO03 module.



This device cannot be disposed of as a domestic waste but according to WEEE European Directive 2012/19/EU





## 8 Special Instruction for Use

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- The equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC/EN 60664-1.
- The equipment shall be installed in an enclosure that provides a degree of protection not less than IP 54 in accordance with IEC/EN 60079-15.
- Transient protection shall be provided that is set at a level not exceeding 140 % of the peak rated voltage value at the supply terminals to the equipment.
- Install the HMI device according to the accompanying installation instructions.
- Ground the HMI device according to the accompanying installation instructions.
- Only qualified personnel may install the HMI device or repair it.
- Ensure that the ventilation holes are not covered.
- Care shall be taken not to allow layers of dust to form on the graphic panel in a way that might cause the accumulation of static charges. Keep the faceplate of the HMI device clean: the equipment must be cleaned only with a soft cloth and neutral soap product. Do not use solvents.
- This device should not be used for purposes and methods other than indicated in this document and in the documentation accompanying the product.

## 9 Getting Started

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eX Series 700M HMI products delivery configuration is based on a loader. Use the services of the loader to install applications on the device such as JMobile runtime or browsers.

JMobile Studio version V4.5 or higher is required. JMobile Studio is a software tool that must be properly installed on a computer running Microsoft Windows.

There are two options to transfer a JMobile application project to a HMI device:

|          |                                                                                                                                                                                                                                                                         |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet | Connect the HMI device to the computer with an Ethernet network. In JMobile Studio select the command Run/Download to target. You may have to ensure that the proper firewall policy has been configured in the computer to allow JMobile Studio to access the network. |
| USB      | Create an Update Package using JMobile Studio and copy it to a USB Flash drive.                                                                                                                                                                                         |

Updated product documentation is available at [www.exorint.com](http://www.exorint.com).

For the products described in this manual please check:

Systems Settings User Manual

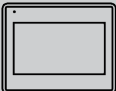
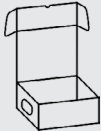
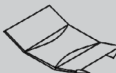
JMobile Studio User Manual

Web Browser User Manual



## 10 Environmentally-friendly disposal

All components related to the eX700M e eX700M Web series are designed to respect the environment and minimize pollution impact as much as possible. It is important to specify how to dispose of the different components of the system in order to have an eco-friendly recycling process.

| Component                                                                           | Disposal                                                                            | Material Code | Disposal Method                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------|
|    |    | -             | This devices cannot be disposed of as a domestic waste but according to WEEE European Directive 2012/19 |
|    |    | PAP20         | Paper recycling                                                                                         |
|    |    | C/PAP81       | Separate collection (composite materials)                                                               |
|  |  | PAP22         | Paper recycling                                                                                         |
|  |  | LDPE4         | Plastic recycling                                                                                       |
|  |  | PET1          | Plastic recycling                                                                                       |

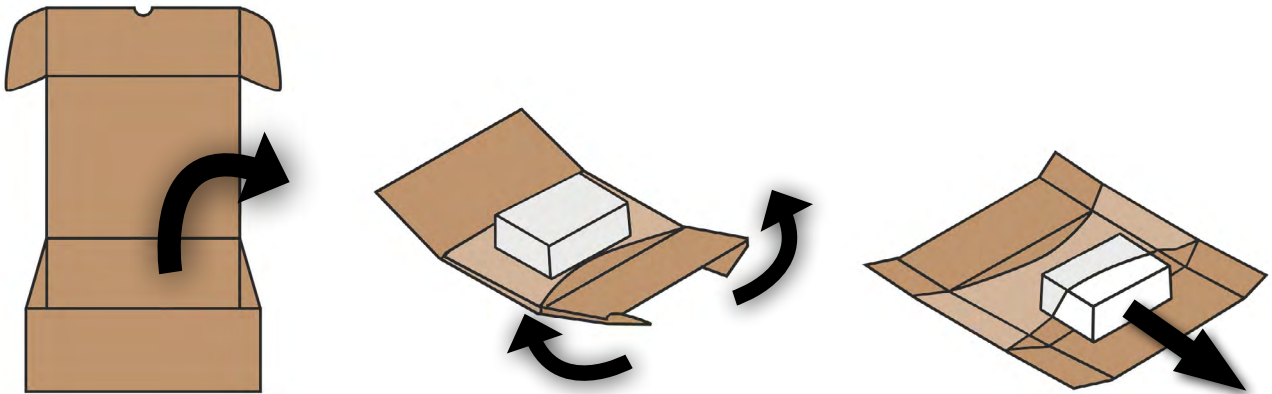
*Please dispose of packaging and components according to local recycling and waste disposal regulations.*



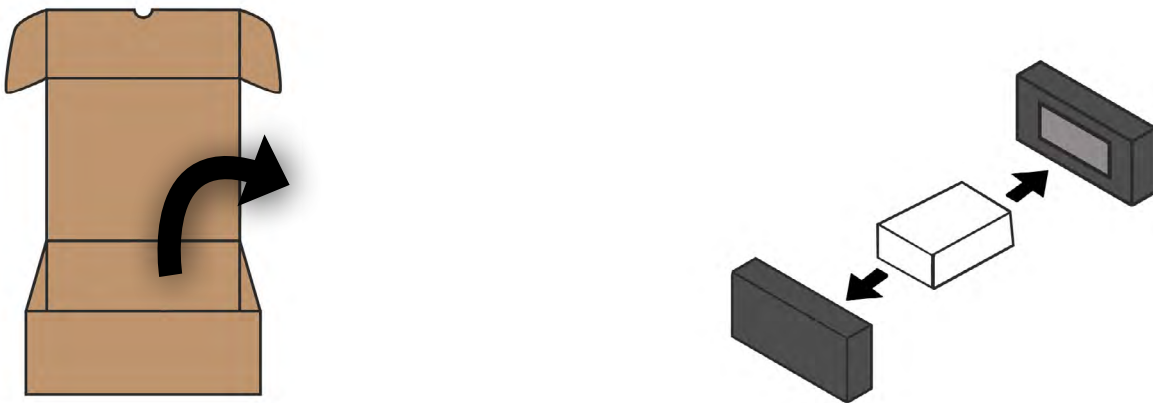
# 11 Unpacking and Packing Instructions

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- Unpacking eX705M, eX707M, eX710M, eX712M



- Unpacking eX715M, eX715MH, eX721M



- To repack the units, please follow the instructions backwards.



# Technology powered by **X Platform**



The all-in-one platform  
for industrial automation

## HARDWARE



EXOR

## SOFTWARE



JMobile®

## IoT PLATFORM



COXVINA